UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

EPA United States Environmental Protection Agency **Office of Pesticide Programs**

Friday, June 22, 2012

MEMORANDUM

Subject: Acute Toxicity Review for EPA Reg. No.: 89101-R
DP Barcode: D401569
Product Name: Tefcite

From: Ian Blackwell, Biologist
Chemistry and Toxicology Team
Product Science Branch
Antimicrobials Division (7510P)

Through: Karen Hicks, Team Leader
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To: Marshall Swindell, PM 33/ Karen Leavy
Regulatory Management Branch
Antimicrobials Division (7510P)

Applicant: Reintjes Marine Surface Technologies, LLC

FORMULATION FROM LABEL:

Active Ingredient(s):	% by wt.
Cuprous oxide	56.350
Zinc	0.054
Silver	0.018
Other Ingredient(s):	43.578
Total:	100.00

I BACKGROUND: Reintjes Marine Surfaces Technologies, LLC, has submitted a complete set of six acute toxicity studies to support their pending registration, "Tefcite". Eurofins/ Product Safety Laboratories conducted these studies.

II RECOMMENDATIONS:

1. Each of the six submitted studies is considered acceptable by Agency standards.

The acute toxicity profile for File Symbol 89101-R is currently:

Study	MRID Number	Toxicity Category	Study Status
Acute Oral Toxicity	487720-08	IV	Acceptable
Acute Dermal Toxicity	487720-09	IV	Acceptable
Acute Inhalation Toxicity	487720-10	IV	Acceptable
Primary Eye Irritation	487720-11	II	Acceptable
Primary Skin Irritation	487720-12	III	Acceptable
Dermal Sensitization	487720-13	Nonsensitizer	Acceptable

III LABELING:

Label Review System

COMPLETED

PRODUCT ID #: **089101-00001**

PRODUCT NAME:

PRECAUTIONARY STATEMENTS

SIGNAL WORD:
WARNING

SPANISH SIGNAL WORD:
AVISO

Si usted no entiende la etiqueta, busque a alguien para que se la explique a usted en detalle.
(If you do not understand the label, find someone to explain it to you in detail.)

Hazards to Humans and Domestic Animals:

Causes substantial but temporary eye injury. Do not get in eyes or on clothing. Avoid contact with skin or clothing. Wear protective eyewear (goggles, face shield, or safety glasses). Wash thoroughly with soap and water after handling and before eating, drinking, chewing gum, or using tobacco. Remove and wash contaminated clothing before reuse. Wear long-sleeved shirt and long pants, socks, shoes, and chemical-resistant gloves (such as Natural Rubber, Selection Category A).

First Aid:

If in eyes:
-Hold eye open and rinse slowly and gently with water for 15-20 minutes.
-Remove contact lenses, if present, after the first 5 minutes, then continue rinsing.
-Call a poison control center or doctor for treatment advice.

If on skin:
-Take off contaminated clothing.
-Rinse skin immediately with plenty of water for 15-20 minutes.
-Call a poison control center or doctor for treatment advice.

Have the product container or label with you when calling a poison control center or doctor or going for treatment. You may also contact 1-800-xxx-xxxx for emergency medical treatment information.

Label Created by: Ian Blackwell on 06/22/2012 Last Updated by: Ian Blackwell on 06/22/2012

DATA REVIEW FOR ACUTE ORAL TOXICITY TESTING (§ 81-1, 870.1100)

Product Manager: 33 **Reviewer:** I. Blackwell
MRID No.: 487720-08 **Study Completion Date:** 3/22/2011
Lab Study No.: 31232

Testing Laboratory: Eurofins/ Product Safety Laboratories
Authors: Carolyn Lowe, L.A.T.G.

Quality Assurance (40 CFR §160.12): Included

Test Material: Tefcite, "brown powder"

Species: Sprague-Dawley derived albino rat
Weight: 176-211 g **Age:** 11-12 weeks
Source: Ace Animals, Inc.

Conclusion:

1. LD_{50} (mg/kg):
Males= Not tested
Females > 5,000
Combined= Not tested

2. The estimated LD_{50} is greater than 5,000 mg/kg

3. Tox. Category: IV **Classification:** Acceptable

Procedure (Deviations from §81-1): None

Results:

Dosage (mg/kg)	(Number Deaths/Number Tested)		
	Males	Females	Combined
5,000	---	0/3	---

Observations: Ano-genital staining.

Gross Necropsy: The lab observed no gross abnormalities.

DATA REVIEW FOR ACUTE DERMAL TOXICITY TESTING (§81-2, 870.1200)

Product Manager: 33 **Reviewer:** I. Blackwell
MRID No.: 487720-09 **Study Completion Date:** 3/22/2011
Lab Study No.: 31233

Testing Laboratory: Eurofins/ Product Safety Laboratories
Author: Carolyn Lowe, LATG

Quality Assurance (40 CFR §160.12): Included

Test Material: Tefcite, "brown powder"

Species: Sprague-Dawley derived albino rat
Weight: Males= 247-298g **Age:** 9-10 weeks
Females= 187-216 g
Source: Ace Animals, Inc.

Summary:

1. **LD_{50} (mg/kg):**
   Males= > 5,000 mg/kg b.w.
   Females= > 5,000 mg/kg b.w.
   Combined= > 5,000 mg/kg b.w.

2. **The estimated LD_{50} is greater than 5,000 mg/kg of body weight.**

3. **Tox. Category:** IV **Classification:** Acceptable

Procedure (Deviation From §81-2): None

Results:

Reported Mortality

DOSAGE (mg/kg)	(NUMBER DEATHS/NUMBER TESTED)		
	Males	Females	Combined
5,000	0/5	0/5	0/10

Observations: Dark or light brown staining at dose site. Erythema. Anogenital staining.

Gross Necropsy Findings: No gross abnormalities.

DATA REVIEW FOR ACUTE INHALATION TOXICITY (§81-3, 870.1300)

Product Manager: 33 **Reviewer:** I. Blackwell
MRID No.: 487720-10 **Study Completion Date:** 4/18/2011
Lab Study No.: 21234

Testing Laboratory: Eurofins/ Product Safety Laboratories
Author: Carolyn Lowe, LATG

Quality Assurance (40 CFR §160.12): Included

Test Material: Tefcite, "brown powder"
Concentration: 2.02 mg/L

Species: Sprague-Dawley derived albino rat
Weight: Males= 231-264 g Females= 170-212 g
Age: 7-8 weeks
Source: SAGE Labs

Summary:

1. **LC_{50} (mg/L)** **Males** > 2.02 mg/L
   Females > 2.02 mg/L
   Combined > 2.02 mg/L
2. **The estimated LC_{50} is greater than 2.02 mg/L of air.**
3. **MMAD:** 3.55 **µm**
4. **Toxicity Category:** IV **Classification:** Acceptable

Procedure (Deviation From §81-3): Initially, the study was conducted such that it did not meet Toxicity Category IV. The study was reconducted to meet Toxicity Category IV.

Results:

Reported Mortality

Exposure Concentration	(NUMBER DEATHS/NUMBER TESTED)		
	Males	Females	Combined
2.02 mg/L	0/5	1/5	1/10

Chamber Atmosphere			
Dose Level	MMAD	GSD	particles < 4.7 μm
2.02	3.55 μm	2.525 μm	62.35%

Chamber Environment	
Chamber Volume	6.7 liters
Airflow	31.7 LPM
Temperature	18-19 ◦ C
Relative Humidity	27-35%

Clinical Observations: Irregular respiration, moist rales, hypoactivity.

Gross Necropsy Findings: Lungs moderately red, intestines slight distended.

DATA REVIEW FOR PRIMARY EYE IRRITATION TESTING (§81-4, 870.2400)

Product Manager: 33 **Reviewer:** I. Blackwell
MRID No.: 487720-11 **Study Completion Date:** 3/22/2011
Lab Study No.: 31235

Testing Laboratory: Eurofins/ Product Safety Laboratories
Author(s): Carolyn Lowe, LATG

Quality Assurance (40 CFR §160.12): Included

Test Material: Tefcite, "brown powder"
Dosage: 0.1 gram

Species: New Zealand albino rabbit **Sex**: 3 females
Weight: Not reported **Age**: "young adult"
Source: Robinson Services, Inc.

Summary:

1. **Toxicity Category**: II

2. **Classification**: Acceptable

Procedure (Deviations From §81-4): None

Results:

Observations	(number "positive"/number tested)							
	Hour	Days						
	1	1	2	3	4	7	14	21
Corneal Opacity	3/3	3/3	3/3	3/3	3/3	2/3	1/3	0/3
Iritis	3/3	3/3	3/3	3/3	3/3	0/3	0/3	0/3
Conjunctivae								
Redness	3/3	3/3	3/3	3/3	3/3	0/3	0/3	0/3
Chemosis	3/3	3/3	3/3	3/3	3/3	1/3	0/3	0/3
Discharge	3/3	3/3	3/3	3/3	3/3	1/3	0/3	0/3

- - - = no observations at this point

DATA REVIEW FOR SKIN IRRITATION TESTING (§81-5, 870.2500)

Product Manager: 33
MRID No.: 487720-12

Reviewer: I. Blackwell
Study Completion Date: 3/22/2011
Lab Study No.: 31236

Testing Laboratory: Eurofins/ Product Safety Labs
Study Director: Carolyn Lowe, LATG

Quality Assurance (40 CFR §160.12): Included

Test Material: Tefcite, "brown powder"
Dosage: 0.5 g

Species: New Zealand albino rabbit
Weight: Not reported
Age: "young adult"
Source: Robinson Services, Inc.

Summary:

1. **Toxicity Category:** III

2. **Classification:** Acceptable

Procedure (Deviations From §81-5):

Results: "Within 24 hours after patch removal, very slight to well-defined erythema and very slight edema were noted for all three treated dose sites." The incidence and severity of lessen after that time. Two animals displayed desquamation on Day 7. Animals were free of erythema and edema by Day 7.

DATA REVIEW FOR DERMAL SENSITIZATION TESTING (§81-6, 870.2600)

Product Manager: 33 **Reviewer:** I. Blackwell
MRID No.: 487720-13 **Study Completion Date:** 3/22/2011
Lab Study No.: 31237

Testing Laboratory: Eurofins/ Product Safety Labs
Author: Carolyn Lowe, LATG

Quality Assurance (40 CFR §160.12): Included

Test Material: Tefcite, "brown powder"
Positive Control Material: α-HexylCinnamAldehyde (HCA)

Species: Hartley Albino guinea pig
Weight: 263-461 g **Age:** "young adult"
Source: Elm Hill Breeding Labs

Method: Buehler Method

Summary:

1. **This Product is not a dermal sensitizer.**

2. **Classification:** Acceptable

Procedure (Deviation From §81-6): None

Procedure: Once each week for three weeks, 0.4g of a 75% w/w mixture of the test material in mineral oil was topically applied to the left side of each test animal using an occlusive 25 mm Hill Top chamber. After each of these six-hour exposures, chambers were removed, test sites cleaned and readings were made of reactions local to the test sites. Twenty-seven days after the first induction dose, four-tenths of a milliliter of a 75% w/w mixture of the test material in mineral oil was topically applied to the right side of each test animal using an occlusive 25 mm Hill Top chamber.

Rechallenge: due to unclear challenge results, the animals were rechallenged with concentrations of 56% and 38% test material.

Results:
Induction: Very faint to faint erythema was observed in all test sites following induction treatment.

Challenge: Very faint to faint erythema was noted for 11/20 test sites 24 hours after challenge. Very faint erythema was present at five of challenge sites at 48 hours.

Rechallenge:
56%: Very faint erythema was observed in 18/20 test-material treated rechallenge sites.
38%: Very faint erythema was noted in 14/20 test-material challenged sites 24 hours after challenge. No irritation was observed 48 hours after treatment.